COOK INLET SUBSISTENCE CONSUMPTION ASSESSMENT OF THE SELDOVIA, PORT GRAHAM, NANWALEK, AND TYONEK TRIBES OF COOK INLET, AK

Phase II: Contaminant testing of Sockeye Salmon

Quality Assurance Project Plan

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1.0 ACKNOWLEDGEMENTS

This project is being undertaken by the Seldovia Village Tribe (SVT)'s Environmental Staff through an Environmental Protection Agency (EPA) Indian General Assistance Program (IGAP)

Unmet Needs Grant. This project is part of a 2nd phase of a subsistence consumption assessment of Cook Inlet tribes (Seldovia, Port Graham, Nanwalek, and Tyonek). The 1st phase of this assessment was a survey of tribal members to determine consumption rates of subsistence foods (mainly fish and shellfish). This survey took place between November 2011 and September 2012. The 2nd phase of this assessment is tissue sampling of priority subsistence foods for contaminants. SVT was funded to conduct tissue sampling of sockeye salmon within Cook Inlet during the summer of 2014. This will be a collaborative project amongst the four aforementioned tribes, the Alaska Department of Environmental Conservation (ADEC) through their Fish Tissue Testing (i.e. Fish Monitoring) Program, and EPA. We sincerely wish to thank EPA for funding this project, ADEC for providing free laboratory and shipping services, and our partner tribes for assisting with this project.

2.0 OBJECTIVES

The objective of this project is to protect and enhance the health of Cook Inlet tribal members by collecting data on contaminants present in priority fish species eaten by tribal members (specifically sockeye salmon). Specific goals include:

1) The analyses of whole body samples of sockeye salmon collected from Cook Inlet to determine the potential for human health and environmental effects associated with levels of chemical contaminants

Commented [KL1]: What parts of the fish are consumed? Usually fillet tissues are analyzed. If the desire is to get whole body concentrations for ecological risk assessment, it might be helpful to have both whole body and fillet samples analyzed to determine contaminant relationships between the two. Another consideration might be sampling organism at different life stages if environmental risk assessment is being considered. Levels of contaminants in juvenile salmonids and/or eggs are of potential concern.

I'm curious as to why only salmon and not other species are being sampled. Organisms with smaller home ranges are likely to be more impacted by regional contamination than salmon, which spend a significant portion of their lives in the open ocean.

2) To establish a more comprehensive database of contaminant concentrations within Cook Inlet for evaluation and use in establishing or revising water quality standards, in the issuance or removal of human health fish consumption advisories, and in environmental impact assessments.

This QAPP is designed to ensure that all fish tissue sample analytical results are of consistent, high quality so that the best information is made available to evaluate and protect traditional resources of Cook Inlet tribal members.

3.0 BACKGROUND

Cook Inlet stretches 180 miles (290 km) from the Gulf of Alaska to Anchorage in south-central Alaska. This large tidal estuary covers about 100,000 km² of southern Alaska, east of the Aleutian Range and south of the Alaska Range. At least 23 rivers and streams empty into Cook Inlet. For thousands of years, native Alaskans have relied on the rich diversity and abundance of animals and plants residing in Cook Inlet as traditional foods. Development and oil and gas activities occurring in Cook Inlet have raised great concerns over contaminants in traditional foods harvested within Cook Inlet and the risk these contaminants pose to human health.

PAST EVALUATIONS

Commented [KL2]: Would be helpful to have sample locations of these previous studies mapped. Selection of sample locations should be based on considerations provided in section 5.3.

What this section is missing is a discussion of what data are needed to evaluate human and ecological risks, where these results fit into overall data needs, what further work needs to be done, and how this sampling effort will fit into a broader sampling plan.

Previous investigations by federal and state agencies have identified metals, pesticides, polychlorinated biphenyls (PCB), polycyclic aromatic hydrocarbons (PAH) and dioxin compounds in traditionally eaten foods from Cook Inlet. Contaminant data from tissue sampling of fish and

shellfish within Cook Inlet has been previously collected through studies undertaken by multiple agencies and organizations.

These studies/projects include:

1. Fish Tissue Testing Program (i.e. Fish Monitoring Program) – ADEC:

Supported by funding from the EPA, National Oceanic and Atmospheric Administration (NOAA) and Bureau of Ocean Energy Management, Regulation, and Enforcement (BOEMRE), contaminant data for salmon (all five species), halibut, pacific cod, sablefish, black rockfish, sheefish, lingcod, pollock as well as other marine and fresh water species throughout Alaska has been collected for trace metals (methyl mercury, total mercury, selenium, copper, lead, cadmium) and organic contaminants. Most of the data specific to Cook Inlet was collected between 2001 and 2010. More information about this program can be found at http://www.dec.state.ak.us/eh/vet/fish.htm.

2. Assessment of Contaminant Body Burdens and Histopathology of Fish and Shellfish Species Frequently Used for Subsistence Food by Chugach Native Communities (NPRB - Project-1019; July 1, 2010-February 28, 2013):

This project was a collaborative effort amongst the Chugach Regional Resources Commission (CRRC), the Alutiiq Pride Shellfish Hatchery, the NOAA National Status and Trend (NS&T) Program, and the Northwest Fishery Science Center (NWFSC). This study assessed the contaminant status and histopathology condition of two species of salmon (chum and sockeye salmon) and shellfish (cockles and littleneck clams) commonly harvested by natives in the Chugach region. The fish and shellfish were collected from traditional subsistence harvest areas in the vicinity of Nanwalek, Port Graham and Seldovia. Tissue was analyzed for trace metals and residues of organic contaminants routinely monitored by NS&T program, and histologically characterized for the presence, prevalence and severity of tissue pathology, disease, and parasite infection.

3. Evaluation of seafood and plant data collected from Cook Inlet near the native villages of Port Graham, Nanwalek, Seldovia, and Tyonek, Alaska- Agency for Toxic Substances and Disease Registry (ATSDR)-2009:

EPA collected whole fish, mussels/clams, other invertebrates (i.e. snail, chiton, and octopus) and plants from Cook Inlet in 1997. Between June and August 2002, ADEC collected 65 fish (as part of their Fish Tissue Testing Program) that included Pacific cod, chinook salmon, pink salmon, chum salmon, red salmon, silver salmon, pollock, and halibut from lower Cook Inlet. Skinless fillets and halibut roast from 47 fish were analyzed for heavy metals. Fillets from six Chinook salmon were also analyzed for pesticides, dioxins, and polychlorinated biphenyls (PCBs).

4. Cook Inlet Regional Citizens Advisory Council (CIRCAC) Environmental Monitoring Program – 1993, 1996, and 2000:

Beginning in 1993, CIRCAC began a series of preliminary studies to assess impacts of oil and gas operations on Cook Inlet. In 1993 and 1996, total polycyclic aromatic hydrocarbons (PAHs) were measured in mussels and deposit-feeding clams from seven locations in Cook Inlet and one location in Shelikof Strait. In 2000, PAH concentrations were measured in 3 razor clams, 2

mussels, and 3 deposit-feeding clams from the east side of upper Cook Inlet; 4 soft shell clams, 1 razor clam, and 2 deposit-feeding clams from the middle of upper Cook Inlet; and 5 deposit-feeding clams, 1 mussel, 2 razor clams, and 1 softshell clam from the west side of upper Cook Inlet.

PRESENT CONCERNS

Based on existing data, levels of chemicals found in many native foods from Cook Inlet appear to be often at levels that are found in fish from other parts of Alaska or from grocery stores (ATSDR 2009, Apeti et al. 2013, ADEC Fish Monitoring Program-unpublished data). However, large gaps exist between years that data were collected for individual species, sample sizes and data are limited for particular species (especially sockeye salmon), and previous investigations did not always target whole body fish samples or specific fish organs/portions eaten in traditional subsistence diets. Additionally, an assessment of subsistence consumption rates (fish and shellfish) of Cook Inlet tribal members from Seldovia, Port Graham, Nanwalek, and Tyonek (conducted between 2011 and 2012) undertaken by SVT, revealed that tribal members consume a much larger amount of fish per day (grams/day or g/d), on average, than what is used and/or recommended by state and federal agencies to establish water quality standards in Alaska based on human health criteria (94.8 g/d vs. 6.5 g/d and 17.5 g/d respectively). This implies that contaminants present in the waters of Cook Inlet, and subsequently in the foods eaten in traditional subsistence diets, may be having a much more significant impact on the health of tribal members than previously thought. “Tighter” water quality standards that reduce the amount of contaminants allowed to be discharged into Cook Inlet may be required to protect the health of Cook Inlet tribal members.

SVT wishes to obtain more current contaminant data for priority subsistence foods of Cook Inlet tribal members given the aforementioned concerns. Based on the assessment completed by SVT in 2012, sockeye salmon was determined to be one of the top fish species eaten by Cook Inlet tribal members. Given the importance of sockeye salmon in traditional native diets and the limited amount of contaminant data available for this species within Cook Inlet, SVT will undertake tissue sampling of 36 whole body sockeye salmon (harvested within Cook Inlet) for analysis of several contaminants in the summer of 2014. This project will be undertaken as a collaborative effort between SVT, the Port Graham Tribal Council, the Nanwalek IRA Council, the Native Village of Tyonek, EPA, and the ADEC. These data will add to pre-existing databases of contaminant concentrations within Cook Inlet. Such databases are important resources when state and federal agencies are considering issuing, updating, or removing human health fish consumption advisories, when undertaking environmental impact assessments, and when establishing or updating water quality standards. The ADEC is currently undergoing their triennial review process for water quality standards in Alaska so these data will be particularly relevant in addition to the fish consumption rates obtained for Cook Inlet tribal members during the recent assessment.

4.0 DESCRIPTION OF WORK TO BE PERFORMED

- Obtain permit(s) from appropriate agencies for sampling/collection of sockeye salmon
- Collaborate with the ADEC, the Nanwalek IRA Council, the Port Graham Tribal Council, and the Native Village of Tyonek
  - Correspond with partner tribes and ADEC through teleconference calls and e-mail to keep updated with progress. Schedule planning meetings as needed
  - Develop QAPP and send to partner villages, ADEC, and EPA for comments, edits, and approval

- Develop and post job description to hire samplers from each participating village
- Hire two samplers from each village (SVT Environmental Coordinator and Assistant will serve as samplers for Seldovia)
- Samplers trained in proper collection and quality control techniques
- SVT Environmental Coordinator and Assistant will travel to each village, during sampling/collection events, to oversee project activities and ensure proper preparation and shipping procedures are followed for transport of samples
- Share findings/results with EPA, ADEC, and partner villages

- Collect 36 whole-body (WB) sockeye salmon within Cook Inlet in the summer of 2014
  - Purchase plastic leak proof/fish bags
  - Collect 3 sockeye salmon specimens from around each participating village (Seldovia, Port Graham, Nanwalek, and Tyonek) during sockeye runs at three different times in the summer of 2014 (at the beginning, at the middle, and towards the end of the run)
  - Upon collection:
    - Fish samples will be individually placed into labeled plastic leak proof/fish bags (labeled on outside of bag).
    - Fish sampling forms used by ADEC for Fish Tissue Testing Program will be filled out by sampler(s) and included with samples
    - Labels made out of write in the rain paper will be placed inside bags containing fish samples
    - Samples will be kept on ice (or ice packs) in a cooler until arriving back on shore and then frozen
  - Provide data that represents expected exposure areas for the target fish species (i.e. within their home range)
  - Provide data that represents areas where target fish species is harvested and consumed from
  - Provide data that can be used to estimate human health and ecological risk from exposure to contaminants in fish
- Prepare and ship samples to laboratories for analysis following proper procedures
- Analyze samples for the following contaminants:
  - Polychlorinated biphenyls (PCBs)
  - Chlorinated phenolics (pesticides)
  - Flame-retardant Polybrominated Diphenyl Ethers (PBDEs)
  - Heavy metals (mercury, arsenic, cadmium, copper, lead, and selenium)
- Conduct data review, evaluation, and analysis
- Prepare reports

- Prepare 1 page success story

Commented [KL3]: Locations of samples should be specified. Some consideration might be given to preparing composite samples. Three samples per location is inadequate for computing upper confidence limit statistics on an individual location basis. A minimum of six samples should be considered in order to compute upper confidence limits.

How much fish will need to be stored? What tissues will be analyzed? This will require a review of the tissue amount needed for all analytical procedures.

How will the size of salmon be considered in the analysis? Older fish have higher contaminant levels.

5.0 SAMPLING DESIGN AND METHODS

The fish collection methods described in this section are intended to provide standardized, reliable, and repeatable results. Additionally, these methods are consistent with methods utilized by ADEC in their Fish Tissue Testing Program and were derived from ADEC.

5.1 Field Crew

SVT's Environmental Assistant will serve as Project Manager and be responsible for carrying out

project activities. The Environmental Assistant will report to the Environmental Coordinator. Assurance oversight of grant requirements and project management are responsibilities of SVT's Environmental Coordinator and SVT's President/CEO ensures project compliance to the EPA and other regulatory agencies. In Seldovia, SVT's Environmental Assistant and Coordinator will collect fish samples. In the other three villages, two local residents will be hired to collect fish samples. SVT's Environmental Assistant and Coordinator will travel to each of the partner villages, when it is time to collect samples, to ensure samplers are following proper procedures and quality assurance/quality control is maintained.

5.2 Field Operations Schedule

Field work described in this QAPP is expected to take place during the summer of 2014. Three whole body (WB) sockeye salmon samples will be collected from around each participating village (Seldovia, Port Graham, Nanwalek, and Tyonek) during sockeye runs at three different times in the summer of 2014 (at the beginning, at the middle, and towards the end of the run). In total, 36 WB samples of sockeye salmon will be sent to ADEC for analysis of contaminants.

Based upon typical timing runs of sockeye salmon around each village, sampling/collection events for each village are anticipated to take place:

Seldovia

1st sampling event (early summer):

2nd sampling event (mid summer):

3rd sampling event (late summer):

Port Graham

1st sampling event (early summer):

2nd sampling event (mid summer):

3rd sampling event (late summer):

Nanwalek

1st sampling event (early summer):

2nd sampling event (mid summer):

3rd sampling event (late summer):

Tyonek

1st sampling event (early summer):

2nd sampling event (mid summer):

3rd sampling event (late summer):

Adjustments to sampling dates may be necessary to account for variable conditions such as inclement weather, difficulties in accessing sampling locations, time needed to collect samples, and sockeye run times.

5.3 Sampling Location Selection Procedure

Sampling locations will be chosen based on local knowledge of where the target fish species can be found although the proximity of sampling locations to potential contaminant sources may also be considered.

Commented [KL4]: Sampling locations need to be worked out in advance.

5.4 Sampling Gear

Gill or set nets with mesh sizes appropriate, and legal, for catching adult sockeye salmon will be used to avoid excessive sampling effort and minimize by-catch of smaller fish. The gill nets and supporting lines will be constructed of non-tarred monofilament or twine to avoid contamination with petroleum-based compounds.

Gear and equipment required for every sampling event is provided in the table below:

Equipment and Supply List for Onboard Fish Collection Activities	
Equipment	Minimum Quantity
Sampling vessel (including boat, motor, oars, fuel, adequate lighting and required safety equipment)	1
Gill nets (anchors, depth adjustment lines, and floats)	1
U.S. Coast Guard-approved personal floatation devices	4
Maps of sampling areas and sites	1
Nitrile gloves	2 pairs
GPS unit	1
Depth finder	1
Ice chest	1
Buckets	1
Bags of ice or ice packs	5
Fish bags	3
Labels on write in the rain paper	3
Copy of QAPP	1
Fish sampling forms	3
Sharpies, pens, and pencils	2 of each
Scientific collection permit	1
First aid kit	1
Marine-band radio	1
Cell phone	1
Camera	1

Commented [KL5]: Seems inadequate for the sampling effort.

5.5 Fish Collection Procedure

From each village, two “samplers” (locally hired) will be responsible for collecting the sockeye salmon from their surrounding fishing area(s). At least one of the samplers hired per village must own, or have access to, a boat and be familiar with how to operate it. Both samplers must have fishing skills and knowledge. SVT’s Environmental Coordinator and Assistant will travel to participating villages during sampling events and oversee activities, including accompanying samplers on the boat.

In general, gill nets will be set with local knowledge of when the fish are running and best times to set and pick during the time the Environmental Coordinator and Environmental Assistant are present to help collect samples. Placement of gill nets at each site will be determined based on the targeted species and the site characteristics. Global positioning system (GPS) coordinates will be recorded for the specific locations where each gill net or trap is deployed. If possible, fish will be removed from the nets as the nets are pulled into the boat, sockeye salmon retained, and nontarget species released or disposed of as specified by the collection permit. Samplers will wear fresh nitrile gloves when bagging fish samples. Special care will be taken to ensure that petroleum products such as grease or fuel do not come in contact with surfaces that contact the fish.

Following is an overview of the fish collection procedures:

1. Transport sample equipment and samplers by boat to sampling locations
2. Deploy and retrieve sampling gear
3. Transfer fish from sampling gear to fish bags (using nitrile gloves). Fish bags will be kept in a cooler containing bags of ice or frozen ice packs.
4. Prepare and complete field sampling records and documentation that will be enclosed in a zip lock bag and put inside the cooler
5. Prepare labels to put inside fish bags and label outside of bags with permanent marker
6. Return to shore and store samples in cooler in freezer until frozen
7. Ship samples to laboratory for analysis

5.6 Labels and Field Documentation

Labels will be made from write in the rain paper and contain:

1) Sample number
2) Sample Date
3) Species
4) Location (lat and long)
5) Site Name
6) Sampler

Labels will be filled out in pencil and placed inside fish bags with samples.

Additionally, for each collection event, ADEC’s fish sampling form will be filled out, enclosed in a zip lock bag, and then placed in the cooler with samples for shipping. Information included in the fish sampling form is as follows:

1) Sample Number
2) Sample Date
3) Species
4) Location (lat and long)
5) Site Name
6) Sampler Affiliation
7) Lead Sampler Signature

A copy of the Fish Sampling Form is provided below.

FISH SAMPLING FORM
ADEC FISH TISSUE TESTING PROGRAM 2013

Sample #	Sample Date	Species	Location Lat	Location Long	Site Name	General Area
notes:						
		Sampler Affiliation			Lead Sampler Signature	

SAMPLING PROTOCOL

Wear fresh gloves to bag each sample in zip-lock bags
Label samples consecutively by marking on sample bag
Place bagged samples on ice until freezing or shipment
Put Sample Collection Form in a zip-lock bag with the samples
Check with DEC Environmental Health Lab (howard.teas@alaska.gov, 907-375-8211) for shipping information
Take care to ensure that samples aren't exposed to exhaust or gasoline during sample collection
Collect as much location information as possible; Lat/long, ADF&G Sub-area, nearest point of land, or general description, as available
General Areas: BS (Bering Sea), GOA (Gulf of Alaska), SE (Southeast), Aleutians, Bristol Bay, PWS, Cook Inlet
If possible, give latitude and longitude in decimal degrees

5.7 Storage and Transfer of Samples for Laboratory Analysis

After a collection event, fish samples will be stored in a cooler (containing ice bags or ice packs) and upon returning to shore, the cooler will be immediately placed into a freezer. Transfer of fish samples to designated laboratories for analysis should commence as soon as possible after fish have frozen hard to ensure that samples will be processed well within the analytical laboratory sample holding times. Coolers will be labeled, sealed, and shipped as directed by ADEC staff involved in the Fish Tissue Testing Program.

Commented [KL6]: Linkages with the ADEC lab need to be described. Can the ADEC lab analyze samples so that holding time considerations will not be of concern?

5.8 Chain of Custody Forms

Fish Sampling Forms will serve as Chain of Custody Forms (as approved by ADEC).

5.9 Laboratory Analysis

Samples will be sent to AXYS Analytical Services in Sydney, B.C., for testing of organic contaminants (PCBs, Chlorinated phenolics (pesticides), and PBDEs) and the State of Alaska (ADEC)'s Environmental Health (EH) Laboratory in Anchorage, Alaska, for testing of heavy metals.

6.0 QUALITY OBJECTIVES AND CRITERIA

6.1 Project Quality Objectives

In order for the data collected in this project to be most effectively utilized by SVT, other tribes, and state and federal agencies, knowledge of the following components is required:

• Present and historical sources of contaminants within Cook Inlet
• Planned development and industries within Cook Inlet that potentially will result in future sources of contaminants
• Nature and extent of current, and historical, contaminants in fish and shellfish within Cook Inlet, throughout the state of Alaska, and in systems with similar types, and levels, of development and industries
• Patterns of fish use and consumption by tribal consumers following traditional subsistence lifestyles
• Ecological receptors and exposure pathways for contaminated fish tissue

Commented [KL7]: These are the issues that should be considered in advance of collecting salmon samples. Again:
1) What data are needed to characterize these issues?
2)What data have been collected already and how do they address these issues?
3)What are the data gaps?
4)What role will the data to be collected play?
5)Ideally, it would be good to have an overall plan to collect all needed data in a methodical way.

Some consideration should also be given to identifying what background levels of contaminants are in order to put these results in context.

The primary purpose of this project is to gather data to support human and ecological risk assessments for Cook Inlet. The data collected as part of this project may have value in:

• Characterizing spatial patterns of contaminants
• Correlating tissue concentrations with contaminant concentrations in sediment
• Comparing contaminant levels among fish species
• Comparing contaminant levels among river reaches
• Characterizing the variation in contaminant concentrations among individual fish of a species
• Comparing contaminant data collected in 2014 to data collected in other years

Since collection methods will follow those established by ADEC's Fish Tissue Testing Program and this is a collaborative project with ADEC, project results will be standardized; incorporated into ADEC's databases and on-going research; and shared with university researchers, other state and federal agencies (EPA, NOAA, Department of Interior, ADF&G, DHSS) to further work in evaluating toxicologic impacts on the coastal ecosystem and salmon health issues.

Quality Control methods that will be in place during field collection:

1) Copy of QAPP on board boat
2) Use of labels and labeling
3) Use of Fish Sampling Forms
4) SVT Environmental Coordinator and Assistant serving as QA monitors onsite
5) Samples being kept in a cooler (and on ice) while on board boat and frozen before being

shipped.

By following the methodology outlined in this QAPP for collecting fish tissue samples, we can be assured of providing high quality samples to the State for useful and defensible information.

6.2 Data Quality Objectives

Since the samples will be sent to laboratories utilized and/or owned by ADEC, the Quality Assurance (QA) procedures and analytical SOPs and associated laboratory Quality Control (QC) in terms of types & frequencies of QC samples and QC acceptance limits have been determined to be adequate to meet the data quality needs of this project. The analytical methods used by the two laboratories will be EPA Methods or Standard Methods, both well-documented and published methods. AXYS Analytical Services' quality policies meet or exceed ISO 17025 standards. ISO/IEC 17025:2005 "General Requirements for the Competence of Testing and Calibration Laboratories" is an international standard that specifies the management and technical requirements for competence to perform test measurements and calibrations. The Environmental Health (EH) Laboratory certifies commercial and municipal laboratories within the State of Alaska to conduct analyses of drinking water and accredits commercial laboratories to conduct analyses including soil remediation.

As such, the laboratories' QC have been accepted as the project's measurement performance criteria for the analytical component. The laboratories will report detection levels on a sample/analyte-specific basis. Method detection limits (MDLs) will be provided. A copy of the Environmental Health Laboratory's Quality Manual is attached to this QAPP as an appendix.

Commented [KL8]: This section is missing a discussion of the reporting limits needed for characterization of environmental and human health risks (i.e. risk based analytical concentration goals) and whether or not available analytical methods can attain these levels. For human health risk assessment, these goals should be based on the amount of various seafood items that Alaska Natives consume. Review of existing data may indicate that levels of contaminants can be detected with the proposed analytical methods, in which case attainment of risk based concentrations will not be of concern.

Some consideration should also be given as to the capability of analytical methods to measure background levels of contaminants. Background contaminant levels are needed to put site specific data in context. If data are already available, then then the current effort need not address this issue. However, if such data are not available, then some sampling to measure background levels and the analytical methods needed to measure background should be developed.

7.0 DATA STORAGE

Data, once received, will be kept in a Microsoft Excel database on SVT office computers. SVT offices and computers are secured.

8.0 REPORTING AND OUTREACH

Laboratory results will be sent directly to ADEC staff involved in the Fish Tissue Testing Program, who will then compile those results into an Excel database. Excel data files containing results will be sent to SVT from ADEC. Upon receiving results, SVT will share the results with all partner Tribes, the Tribal Council, and EPA. A project summary report will be developed by SVT Environmental Personnel and sent out to all the above parties as well.

Additionally, SVT's Environmental Coordinator will submit quarterly reports to our IGAP Project Officer to keep EPA informed of project progress.

9.0 REFERENCES

[ADEC] Alaska Department of Environmental Conservation Fish Monitoring program. Available

online at http://www.dec.state.ak.us/eh/vet/fish.htm

[ATSDR] Agency for Toxic Substances and Disease Registry. 2009. Evaluation of seafood and plant data collected from Cook Inlet near the native villages of Port Graham, Nanwalek, Seldovia, and Tyonek, Alaska. Atlanta, Georgia

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